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BAKER & DANIELS LLP
300 NORTH MERIDIAN STREET
SUITE 2700
INDIANAPOLIS, IN 46204

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KURTZ, BENJAMIN M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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cynthia.payson@bakerdaniels.com

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/762,095
Filing Date: January 21, 2004
Appellant(s): SCHIPPER, AARON

Norman J. Hedges
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/13/09 appealing from the Office action mailed 5/2/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,443,724	Williamson et al.	8-1995
6,893,485	MacDuff	5-2005
5,500,132	Elmi	3-1996
4,443,346	Muller	4-1984
5,676,740	Schwartz et al.	10-1997
3,668,822	Mannion et al.	6-1972
5,490,874	Kuster et al.	2-1996
4,051,033	Blace	9-1977
4,985,182	Basse et al.	1-1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Specification

The amendment filed 8/29/07 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: paragraph [0015] has

been amended to state that the inlet is devoid of flow restrictions. This limitation was not previously part of the written description and this feature has not been presented as being in the possession of the inventor at the time of invention.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 43, 49 and 53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 43, 49 and 53 the specification does not indicate the outlet being substantially devoid of flow restrictions. The addition of a flow restrictor to the outlet is not precluded by the description and the description does not provide support for this negative limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21, 24, 49, 50, 60 and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by Williamson et al. US 5 443 724.

Regarding claim 21, Williamson teaches an apparatus comprising: a shell (12) having an inlet (14), an outlet (24) and an inner cavity in fluid communication with each of the inlet and the outlet, the inner cavity having a direct flow path space positioned directly between the inlet and outlet, and a plurality of tubes (20) positioned within the inner cavity of the shell such that the tubes are oriented substantially parallel to each other and upper ends of the tubes being positioned above the inlet, each of the tubes having a longitudinal axis, and at least one of the tubes having a surface with a plurality of apertures, a minority portion of the plurality of tubes being positioned in the direct flow path space the flow of fluid flowing directly across the minority portion of the plurality of tubes in a substantially radial direction, a majority portion of the plurality of tubes being larger than the minority portion of the plurality of tubes and positioned outside of the direct flow path space, and an air vent (34) (fig. 4, col. 13, lines 49-52).

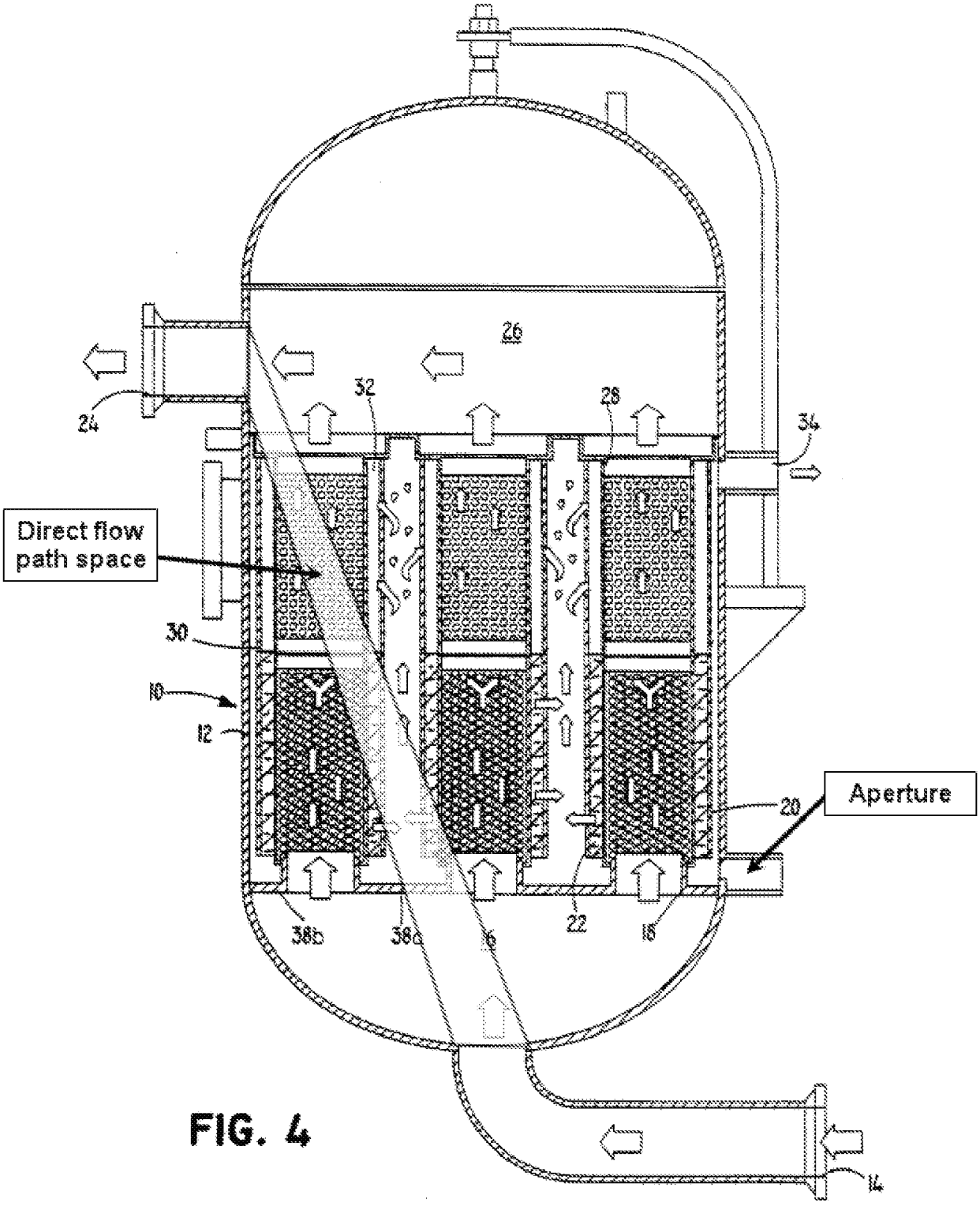
Direct flow path space
Aperture
26
32
28
34
24
30
10
12
20
22
18
38b
38a
16
14

FIG. 4

Regarding claims 24, 49 and 50, Williamson further teaches the shell further comprises a bottom section including an aperture (the tube on the lower right hand side of figure 4 adjacent (18) and (20)) (fig. 4); the outlet is substantially devoid of flow restrictions (fig. 4); the inlet has a minimum cross-sectional area of flow and the outlet has a minimum cross-sectional area of flow that is substantially equal to the minimum cross-sectional area of flow of the inlet (fig. 4).

Regarding claims 60 and 61, Williamson further teaches a first segment of the majority portion of the plurality of tubes is positioned below the direct flow path space and the first segment is larger than the minority portion of the plurality of tubes (fig. 4); and a second segment of the majority portion of the plurality of tubes is positioned above the direct flow path space across the direct flow path space from the first segment and the second segment is larger than the minority portion of the plurality of tubes (fig. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 27-29, 31-35, 43-47, 51, 52 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff US 6 893 485 in view of Elmi US 5 500 132 and Muller US 4 443 346.

Regarding claim 1, MacDuff teaches an apparatus for removing air or debris from a flow of liquid, the apparatus comprising: a shell (40) having an inlet (40c), and outlet (40b), and an inner cavity in fluid communication with each of the inlet and outlet, and an elongate coalescing medium assembly (17) disposed within the cavity of the shell the assembly having a wire mesh tube having ends, a longitudinal axis extending between the ends and a side wall extending between the ends the flow of liquid is directed to travel in a radial direction across the wire mesh tubes (fig. 3, col. 4, lines 10-25) MacDuff does not teach the coalescing medium assembly including a plurality of wire mesh tubes of a core element having greater rigidity.

Elmi teaches a coalescing medium assembly including a plurality of perforated tubes oriented substantially parallel to each other with a core element (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of tubes as taught by Elmi because multiple tubes provides for the lighter material that did not coalesce on the first tube to contact subsequent tubes (col. 4, lines 34-43). Elmi does not teach the core element having a rigidity greater than the other tubes of the assembly.

Muller teaches an elongate core element (5) contacting a plurality of tubes and oriented substantially parallel to the plurality of tubes, the elongated core element having a rigidity greater than the wire mesh tubes (fig. 1 and 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to

modify the assemblies with the teachings of Muller (346) because the central tube serves for supporting the filter tubes (col. 2, line 48).

Regarding claims 27, 43 and 44, MacDuff further teaches the ends of each wire mesh tube are positioned at first and second longitudinal positions along the longitudinal axis, and the outlet has a longitudinal position between the first and second longitudinal positions of the ends (fig. 3); the outlet is substantially devoid of flow restrictions (fig. 3); and the inlet has a minimum cross-sectional area of flow and the outlet has a minimum cross-sectional area of flow that is substantially equal to the minimum cross-sectional area of flow of the inlet (fig. 3).

Regarding claim 45, MacDuff teaches the inner cavity of the shell has an interior diameter (fig. 3). Elmi teaches a plurality of coalescing tubes each having a diameter (fig. 2). The combination of the plurality coalescing tubes of Elmi within the shell of MacDuff would inherently have the diameters of the plurality of tubes be less than the interior diameter of the shell in order for the plurality of tubes to fit.

Regarding claims 28 and 29, Elmi further teaches the coalescing medium assembly further includes a coupling element (the cubic frame) that surrounds and holds together the plurality of tubes (fig. 2); and Elmi further teaches the coalescing medium assembly includes a band wrapped around the coupling element and holding the coupling element in engagement with the plurality of wire mesh tubes (fig. 2).

Regarding claims 46 and 47, how the flow of fluid enters the wire mesh is a process step and does not further structurally limit the apparatus; the velocity of the flow

of fluid being greater at the inlet than in the shell is also a process step and does not further structurally limit the apparatus.

Regarding claim 62, Mere duplication of parts has no patentable significance unless a new and unexpected result is produced, *In re Harza,* 124 USPQ 378 (1960). Providing more coalescing medium assemblies would provide a greater surface area for the coalescing of air and for greater filtration which is a predictable result and obvious to one of ordinary skill in the art.

Regarding claim 31, MacDuff teaches an apparatus for removing air or debris from a flow of liquid, the apparatus comprising: a shell (40) having an inlet, and outlet, and an inner cavity in fluid communication with the inlet and the outlet, and one elongate coalescing medium assembly (17) disposed within the inner cavity of the shell, the coalescing medium assembly including: an elongate core element. MacDuff does not teach a plurality of wire mesh tubes.

Elmi teaches a plurality of tubes having a longitudinal axis, the tubes cooperating to define an interior space therebetween, and an elongate core element being positioned with the interior space oriented substantially parallel to the plurality of tubes (the center tube is the elongate core element) (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of tubes as taught by Elmi because multiple tubes provides for the lighter material that did not coalesce on the first tube to contact subsequent tubes (col. 4, lines 34-43). Elmi does not teach the core element having a rigidity greater than the other tubes of the assembly.

Muller teaches an elongate core element (5) contacting a plurality of tubes and oriented substantially parallel to the plurality of tubes, the elongated core element having a rigidity greater than the wire mesh tubes (fig. 1 and 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the assemblies with the teachings of Muller (346) because the central tube serves for supporting the filter tubes (col. 2, line 48).

Regarding claims 32 and 33, MacDuff further teaches an end cap (the upper part of (40)) including a recess where an end of the elongate core element is received in the recess (fig. 3); and MacDuff and Elmi teach the elongate core element comprises a cylindrical tube (fig. 2, both references).

Regarding claim 34, Elmi teaches the plurality of tubes but does not teach the tubes arranged in a substantially circular pattern when viewed along the longitudinal axis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the tubes in a circular pattern so the plurality of tubes will better fit within the shell as taught by MacDuff having a circular shape. Arranging the tubes in a circular pattern is a mere change in configuration. The configuration of the apparatus is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration is significant, *In re Dailey*, 149 USPQ 47 (1966). The configuration is considered obvious absent some secondary evidence.

Regarding claim 35, MacDuff further teaches the wire mesh tube having substantially horizontal wires and interconnected substantially vertical wires (fig. 2).

Regarding claim 51, MacDuff teaches the inner cavity of the shell has an interior diameter (fig. 3). Elmi teaches a plurality of coalescing tubes each having a diameter (fig. 2). The combination of the plurality coalescing tubes of Elmi within the shell of MacDuff would inherently have the diameters of the plurality of tubes be less than the interior diameter of the shell in order for the plurality of tubes to fit.

Regarding claim 52, how the flow of fluid enters the wire mesh is a process step and does not further structurally limit the apparatus.

Claims 36-38, 41, 42, 53-57 and 59 rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132 and Schwartz et al. US 5 676 740.

Regarding claim 36, MacDuff teaches an apparatus for removing air or debris from a flow of liquid, the apparatus comprising: a shell (40) having an inlet, and outlet, and an inner cavity in fluid communication with the inlet and the outlet, and one elongate coalescing medium assembly (17) disposed within the inner cavity of the shell, the assembly comprising a wire mesh tube having a longitudinal axis, where the flow of liquid flows in a direction substantially transverse to the longitudinal axis of the mesh tube (fig. 3). MacDuff does not teach a plurality of wire mesh tubes or a wire mesh retaining wall.

Elmi teaches a plurality of tubes oriented substantially parallel to each other, each tube having a longitudinal axis extending between the ends (fig. 2). It would have

been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of tubes as taught by Elmi because multiple tubes provides for the lighter material that did not coalesce on the first tube to contact subsequent tubes (col. 4, lines 34-43). The addition of more tubes would also be obvious because a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (2007). The addition of more tubes provides more contact area for the fluid flowing through the apparatus and would have been within the technical grasp of one of ordinary skill in the art.

Schwartz teaches an apparatus for removing air or debris from a liquid having a coalescing medium (38) surrounded by a retaining wall (40) (fig. 1, 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the retaining wall surrounding the coalescing medium assembly as taught by Schwartz because it diffuses and distributes the housing admitted liquid giving the assembly a superior performance, supports the coalescing medium and provides for efficient gas removal at significantly higher liquid flow rates (col. 2, lines 9-13, lines 33-35). Using a wire mesh in place of the perforated sleeve of Schwartz is an obvious structural equivalent.

Regarding claims 37 and 38, MacDuff further teaches the ends of the wire mesh tube is positioned at first and second longitudinal positions along the longitudinal axis,

and the outlet has a longitudinal position between the first and second longitudinal positions of the ends (fig. 3); and an air vent positioned above the tube (fig. 3).

Regarding claim 41, Elmi teaches the plurality of coalescing tubes comprising at least one elongate core element oriented substantially parallel to the plurality of tubes (the tube at the center of the bundle (fig. 2)).

Regarding claim 42, MacDuff further teaches the wire mesh tube includes a sidewall extending between the ends and the liquid enters and exits the sidewalls while passing through the wire mesh (fig. 3).

Regarding claim 53 and 54, MacDuff further teaches the outlet is substantially devoid of flow restrictions (fig. 3); and the inlet has a minimum cross-sectional area of flow and the outlet has a minimum cross-sectional area of flow that is substantially equal to the minimum cross-sectional area of flow of the inlet (fig. 3).

Regarding claim 55, MacDuff teaches the inner cavity of the shell has an interior diameter (fig. 3). Elmi teaches a plurality of coalescing tubes each having a diameter (fig. 2). The combination of the plurality coalescing tubes of Elmi within the shell of MacDuff would inherently have the diameters of the plurality of tubes be less than the interior diameter of the shell in order for the plurality of tubes to fit.

Regarding claims 56 and 57, how the flow of fluid enters the wire mesh is a process step and does not further structurally limit the apparatus; the velocity of the flow of fluid being greater at the inlet than in the shell is also a process step and does not further structurally limit the apparatus.

Regarding claim 59, MacDuff teaches a wire mesh tube includes a plurality of openings but does not teach the size of the openings. Elmi teaches opening in the tubes being 0.25 inches (col. 4, lines 45-52). [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (1984).

Claims 21-23, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132 and Kuster et al. US 5 490 874 or Mannion et al. US 3 668 822.

Regarding claim 21, MacDuff teaches an apparatus for removing air or debris from a flow of liquid, the apparatus comprising: a shell (40) having an inlet, an outlet, and an inner cavity in fluid communication with each of the inlet and the outlet, and a tube positioned within the inner cavity of the shell, the tube having a longitudinal axis having a surface with a plurality of apertures and an air vent (28) positioned to release air that is removed from the flow of liquid by the tube (fig. 3). MacDuff does not teach a plurality of tubes in the cavity of the shell or a minority portion of the tube positioned in a direct flow path.

Elmi teaches a plurality of tubes oriented substantially parallel to each other, each tube having a longitudinal axis and the tubes having a surface with a plurality of

apertures (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of tubes as taught by Elmi because multiple tubes provides for the lighter material that did not coalesce on the first tube to contact subsequent tubes (col. 4, lines 34-43). The addition of more tubes would also be obvious because a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (2007). The addition of more tubes provides more contact area for the fluid flowing through the apparatus and would have been within the technical grasp of one of ordinary skill in the art.

While MacDuff teaches part of the coalescing medium assembly is in the direct flow path MacDuff does not teach a minority portion of the medium assembly being in the direct flow path. Having a minority portion of the coalescing medium assembly in the direct flow path is a change in dimension, wherein either the coalescing medium is lengthened along its longitudinal axis or the inlet and outlet openings are made smaller in diameter. [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (1984). Furthermore, Kuster '874 and Mannion '822 both teach a minority portion of a coalescing medium being located in the direct flow path.

Regarding claims 22, 23, 49 and 50, MacDuff further teaches the flow of liquid flows into and out of the tubes in a direction substantially transverse to the longitudinal axis of the tube (fig. 3); the air vent is positioned above the tube (fig. 3); the outlet is substantially devoid of flow restrictions (fig. 3); and the inlet has a minimum cross-sectional area of flow and the outlet has a minimum cross-sectional area of flow that is substantially equal to the minimum cross-sectional area of flow of the inlet (fig. 3).

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132 and Mannion '822.

Regarding claims 24 and 25, Mannion further teaches a coalescing apparatus having a bottom section including an aperture and a bottom section (45) removably attached to the shell (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the aperture and bottom section of Mannion because the structure provides a means for cleaning out any sediment collected within the apparatus (col. 3, lines 56-72).

Regarding claim 26, Mannion further teaches a coalescing apparatus having a bottom section including a valve (45) (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the valve of Mannion because the structure provides a means for cleaning out any sediment collected within the apparatus (col. 3, lines 56-72).

Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132 and Schwartz '740 and further in view of Mannion '822.

Regarding claim 39, MacDuff in view of Elmi and Schwarz teaches the apparatus of claim 36 but does not teach the shell comprising a bottom section that is removably attached to the shell. Mannion teaches a coalescing apparatus having a bottom section including an aperture and a bottom section (45) removably attached to the shell (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the aperture and bottom section of Mannion because the structure provides a means for cleaning out any sediment collected within the apparatus (col. 3, lines 56-72).

Regarding claim 40, MacDuff in view of Elmi and Schwartz teaches the apparatus of claim 36 but does not teach the shell further comprising a valve. Mannion teaches a coalescing apparatus having a bottom section including a valve (45) (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the valve of Mannion because the structure provides a means for cleaning out any sediment collected within the apparatus (col. 3, lines 56-72).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132' and Muller '346 as applied to claim 1 above, and further in view of Blace US 4 051 033.

MacDuff in view of Elmi and Muller teaches the apparatus of claim 1 but does not teach an end cap including a plurality of recesses. Blace teaches an end cap (16) including a plurality of recesses (formed by member (94), fig. 9 and 10, col. 4, lines 28-34, col. 5, lines 15-20) each member (10) being received in a recess. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the end cap of Blace because the end cap secures the tube in place (col. 4, lines 28-34, col. 5, lines 15-20).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacDuff '485 in view of Elmi '132 and Muller '346 as applied to claim 1 above, and further in view of Basse et al. US 4 985 182.

MacDuff in view of Elmi and Muller teaches the apparatus of claim 1 but does not teach a wire mesh tube including a wire mesh projection extending from an inner surface of the tube. Basse teaches a wire mesh tube (10) including a projection (16) extending from an inner surface of the tube (10) and into an interior of the tube (10) (fig. 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the projection (16) of Basse (182) because the projections define flow paths making good ventilation in the cross and longitudinal directions (col. 1, lines 62-66). Basse teaches the projection (16) may be provided with perforations (col.

4, lines 25-26). Making the projection of a wire mesh would be an obvious structural equivalent.

(10) Response to Argument

Objection to the specification and new matter rejection

Appellant argues that originally filed figure 1 supports the negative limitation of the inlet and outlet being devoid of restriction. This amendment to the specification and to the claims was not proposed until a rejection was made over the prior art to Mannion which shows a restriction in an outlet. Before the introduction of this prior art appellant made no mention in the specification of the inlet and outlet being devoid of resection. There is also no mention in the specification that an objective of the claimed invention is to have minimal impact on the rate of flow of fluid through the inlet and outlet. Appellant's declaration is merely a statement of the opinion by the appellant and does not set forth any evidence that it would be inherent that the inlet and outlet be devoid of restrictions or that the appellant had possession of such a feature.

Claim 21

Appellant argues that Williamson does not teach a majority portion of the tubes are positioned outside of the direct flow path space. The figure in the rejection above shows the direct flow path space as defined by the claim, positioned directly between the inlet and outlet. Having the direct flow path space defined as shown in the figure

above, a majority portion of the tubes is positioned outside of the flow path space. The recitation of the flow of fluid being directly across the minority portion of the plurality of tubes is a process recitation that does not further structurally limit the apparatus.

Claim 24

Appellant argues Williamson does not teach a bottom section including an aperture. The figure in the rejection above shows the claimed aperture in a bottom section of the shell as claimed. The claim does not recite the aperture being downstream of the of the tubes. Williamson clearly shows an aperture in the bottom section of the shell as claimed.

Claims 60 and 61

Appellant argues that Williamson does not teach a first segment of the majority portion of the tubes is below the direct flow path or a second segment is above the direct flow path. The figure in the rejection above shows the direct flow path space and shows that first and second segment of the majority portion of the tubes is below and above the direct flow path space respectively.

Claims 1 and 31

Appellant argues it is not obvious to combine the teachings of MacDuff, Elmi and Muller because they each teach significantly different systems. MacDuff teaches a coalescing filter system for separating gas from a liquid and Elmi teaches a coalescing

filter system for separating oils from water. Both systems work on the same principle of contacting the mixed fluid with a filter medium, one constituent of the mixture attaches to the medium and is separated therefrom. Appellant's declaration is merely a statement of opinion by the appellant and does not present any evidence suggesting one of ordinary skill in the art would be lead away from combining the teachings of these two systems.

Appellant's arguments, with respect to MacDuff possibly being a multiple pass system and the system of Elmi being a single pass system, are based on an intended use of the systems. One of ordinary skill in the art would still be motivated to combine the teachings of Elmi of providing a plurality of tubes to provide more surface area for coalescing as detailed in the rejection.

Appellant argues that MacDuff already appears to provide additional contact area because the element (17) of MacDuff includes multiple wrapped layers and therefore the proposed modification provides no additional benefit. Such an argument is merely speculation as appellant has not provided any evidence that such a modification would not provide additional benefit. Appellant's argument regarding extra cost without added benefit is also speculation. The prior art would lead one of ordinary skill in the art to provide more tubes as taught by Elmi.

Appellant argues that Elmi teaches the use of perforated tubes, which increases the surface area to maximize the efficiency which are different from the wire tube as taught by MacDuff and refers to column 5, lines 5-7 of Elmi. The teaching of Elmi from the recited section is this:

> "If desired, to enhance coalescing within the vertical tubes 20, materials, not shown, such as polyethylene and/or polypropylene may be added. This increases the surface area within the tube assembly and therefore increases the efficiency of coalescing.
>
> The polyethylene and/or polypropylene materials may consist of small diameter hollow tubes with internal configurations and known in the industry as pall rings, or may consist of a mesh type material of varying coarseness, which may be packed within the coalescer tubes 20."

Appellant has misconstrued the teachings of Elmi. Elmi teaches, as optional, the use of packing material to be placed inside of the tubes. Elmi further teaches the material may be a mesh material having varying coarseness, which would be a material similar to the wire screen of MacDuff.

Appellant argues that one of ordinary skill in the art would not look to Muller because it is non-analogous art. Muller relates to a problem of using tubes the are packed together and subjected to forces in the radial direction, mainly supporting those tubes. One of ordinary skill in the art would recognize that Muller teaches the use of a support tube to support tubes that are arranged around it, which is applicable to the combination of MacDuff and Elmi. It is unclear how appellant concludes that the support tube of Muller provides only vertical support against gravity. Muller does not mention any such support. Fluid if flowing radially into and out of the system of Muller and one of ordinary skill in the art would readily recognize the forces acting on the tubes of Muller would be in the radial direction and not longitudinally as suggested by the appellant. Applicant suggests that the combination of the tube of Muller in the apparatus of MacDuff would render the apparatus of MacDuff inoperable because the

tube (5) of Muller has to be elongated to support the other tubes and would interfere with the float of MacDuff. Nowhere does Muller suggest the tube having to be elongated and such an assertion is based solely on appellant's erroneous assertion that the tube (5) of Muller provides only vertical support. Muller further teaches the tube (5) is a support tube and is not perforated and that the tubes which it supports are perforated and described as elastic. The tube (5) of Muller would be inherently more rigid because it does not have any perforations.

Appellant also points to the declaration as a showing of unexpected results. The declaration is merely the appellant's opinion of a showing of unexpected results. Appellant has not shown any evidence beyond mere opinion of unexpected results.

Claim 28

Appellant argues that there is no reason for modifying MacDuff to include a coupling element surrounding the plurality of tubes. Elmi teaches such a coupling device for holding together a plurality of tubes. One would look to Elmi for a teaching of what to do with a plurality of tubes and not look to MacDuff as MacDuff does not teach a plurality of tubes. The limitations of claim 28 would have been obvious to one of ordinary skill in the art from the teachings of Elmi.

Claim 29

Appellant argues that Elmi does not teach "a band wrapped around the coupling element". This feature is clearly shown in figure 2 of Elmi.

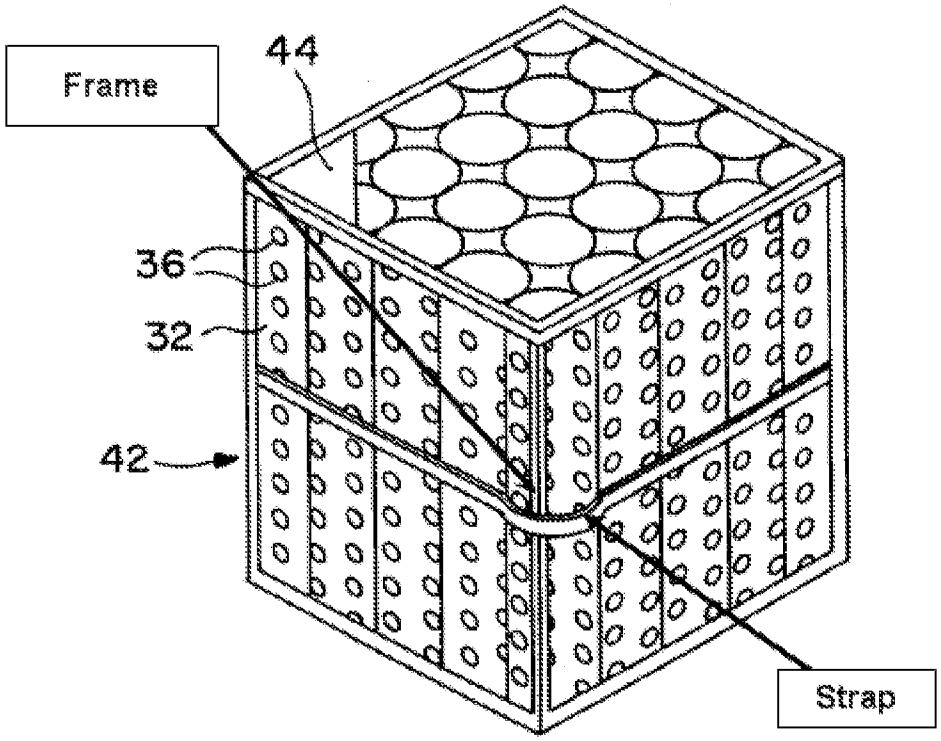

FIG. 2

Claim 62

The recitation of a multiple coalescing assemblies is merely a recitation of a duplication of parts.

Claim 32

Appellant argues that the upper part of element (40) of MacDuff is not an end cap. The upper tube portion of (40) is a cap as it is an overlying structure over the rest of the housing. The upper tube portion also receives a portion of the coalescing filter medium therein.

Claim 34

Appellant argues that it is not obvious to provide the tubes in a circular pattern. Providing the tubes in a circular pattern is merely a change in the configuration of the tubes. Further, MacDuff teaches a circular housing and one of ordinary skill in the art would be lead to arrange the tubes in a circular pattern to aid in inserting the tubes into the housing of MacDuff.

Claim 36

Appellant argues that the diffuser (40) of Schwartz is not a structural equivalent to the claimed wire mesh retaining wall. Schwartz describes the diffuser (40) as "A cylindrical sleeve, having a multiplicity of hole (foramen) formed therein…" (col. 2, lines 9-10). This definition provided by Schwartz would read on a wire mesh retaining wall as claimed and is therefore deemed a structural alternative. Appellant's arguments and appellant's declaration are both based on the structure of the diffuser (40) shown in figures 1 and 2 of Schwartz without taking into account the full disclosure of Schwartz.

Claim 41

Appellant argues that Elmi does not teach at least one elongated core element. The tube at the center of the bundle of tubes shown in figure 2 of Elmi is an elongated core element.

Claim 21

Appellant argues that claim 21 does not recite a dimension and that the combination of MacDuff, Elmi, Mannion and Kuster is based on hindsight. The recitation of a minority portion of the medium assembly being in the direct flow path amounts to a recitation of dimension. MacDuff teaches a portion of the medium assembly being within the direct flow path and a portion of the medium assembly being outside of the direct flow path. Having a minority portion of the medium assembly located within the direct flow path is merely a change in the relative dimension of the length of the medium assembly or a diameter of the inlet and outlet. Furthermore, having a minority portion of a medium assembly located within the direct flow path is known in the art as shown by both Mannion and Kuster. Mannion and Kuster demonstrate that the particular known technique was recognized as part of the ordinary capabilities of one skilled in the art, KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (2007).

Appellant also argues that Mannion is non-analogous art. Mannion teaches an apparatus from removing air or debris from a flow of liquid as recited by claim 21, and is therefore analogous art.

Appellant also argues that the proposed combination is inconsistent with itself. Elmi teaches the advantages of providing a bundle of tubes to provide further area in the direction of the flow path of fluid. Both Mannion and Kuster teach the known technique of providing separation medium outside of the direct flow path in a direction lateral to the flow path. The combination of these teachings would not be inconsistent

as one teaches the advantages of providing more area in the flow path and the other art teaching the technique of providing medium outside of the flow path.

Claim 5

Appellant argues that the rejection of claim 5 is incomplete because Blace does not teach all of the limitations of the claim. Blace teaches the technique of providing an end cap with recesses to secure a plurality of tubes in place. The end cap (16) of Blace has element (94) which fits around the tube, the tube fitting within a recess formed by the element (94) as shown in figures 9 and 10 of Blace. Blace teaches all of the limitations of the claim. One of ordinary skill in the art would be lead to apply the teachings of Blace because it pertains to a similar issue of how to secure a plurality of tubes situated within a housing.

Claim 30

Appellant argues that Basse is non-analogous art. Basse is directed to a packing for contacting flow of fluid with the packing to provide desorption or condensation (col. 1, lines 12-16). These stated purposes of Basse are similar to the purposes of the prior art references of MacDuff and Elmi in that they are separating one constituent of a flow of fluid from another but flowing the fluid through the medium to coalesce one constituent on the medium while passing the other constituent through the medium. Because Basse is concerned with a similar process it is considered analogous art.

Appellant argues that the office action provides no basis for the assertion that the guide surface (16) of Basse would be equivalent to the mesh screen. Basse teaches the guide surface (16) may be provided with perforations. A surface containing perforations would be equivalent to a mesh screen in that both provide a wall with holes passing through the wall. The surface of Basse with perforations would still define a wall structure thereby providing a flow path defined by the structure (16) and the wall (11) (fig. 2). Providing perforations in the wall (16) would only provide additional flow paths but would not destroy the flow path defined by the wall (16) and wall (11).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Benjamin Kurtz/

Examiner, Art Unit 1797

/DUANE SMITH/

Supervisory Patent Examiner, Art Unit 1797

Conferees:

/DUANE SMITH/

Supervisory Patent Examiner, Art Unit 1797

/Glenn A Caldarola/

Acting SPE of Art Unit 1797